Direction Leaflet Number One

HOW TO MAKE AND USE SAFE INSECT-KILLING JARS

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A satisfactory method of killing insects may be something of a problem to the amateur collector, especially since cyanide, the substance most commonly used for this purpose, is just as deadly to human beings as it is to insects. There are liquids, such as ether, that do the job quickly and much more safely, but they are sloppy to use and evaporate so rapidly that the jar must be re-charged many times during a day's collecting. There is, however, a simple method of overcoming these difficulties.

First, find a strong glass bottle small enough to fit in your pocket and wide enough at the mouth to admit the largest insect you are likely to catch. If you are interested only in small species, a vestpocket size test tube or little vial would be handy. If you are planning to collect all kinds of insects, make it two jars at least, since butterflies and moths should have one to themselves. Some of the tiny scales with which they are covered come off in the bottle and cling to the other specimens, thus spoiling their appearance, while the weight and the kicking of one big beetle can ruin a dozen butterflies.

Each jar should have a tight stopper. A screw cap must fit closely without the usual waxed cardboard lining. The wax might soften in the fumes of the killing fluid and smear the specimens. Some collectors prefer a cork, which can be removed with one hand, especially if it has a loop handle of heavy cord, as shown in the picture. Corks of large size can be obtained from the dealers listed under "cork" in the classified telephone book. Make the cork shallow, about half an inch thick for a half-pint mayonnaise jar. Bore the holes for the cord with a small drill or gimlet, or punch them with an ice-pick or a nail. Force the ends of the cord through the holes with the blunt end of a match-stick, and tie a large knot in each. If the holes are at all too big for the cord, caulk them with soft paper and glue.

Secure some plaster-of-paris. A pound will be plenty, and can be bought for a few cents at almost any paint or hardware store.

Fill a teacup about ⅓ full of water, less if you bottle is very small. With a spoon, gently scatter the plaster on top of the water until it can hold no more. When all the free water is absorbed and all the plaster is wet, stir carefully until the mixture is smooth. This method of mixing prevents the formation of air bubbles in the plaster.

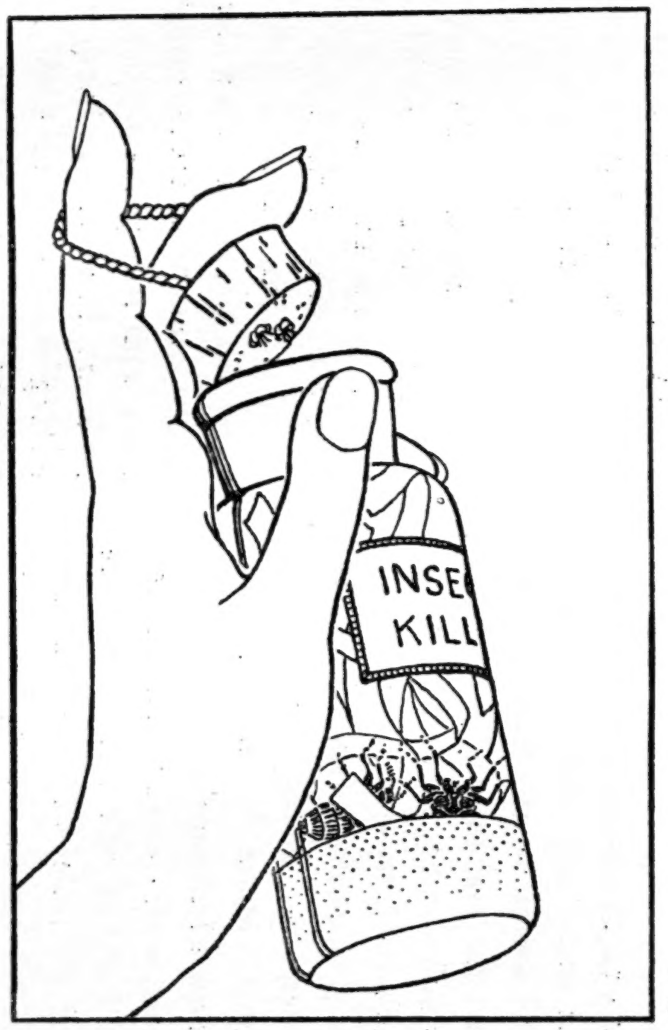
Pour the plaster into the clean bottle until it is about ¾ of an inch deep, less for a little vial. If the surface is not flat, knock the bottle gently to settle it. Then wait for the plaster to set.

If, while you are stirring, the plaster becomes too thick to pour, do not try to soften it by adding more water. Throw it away, wash the container, and start all over again.

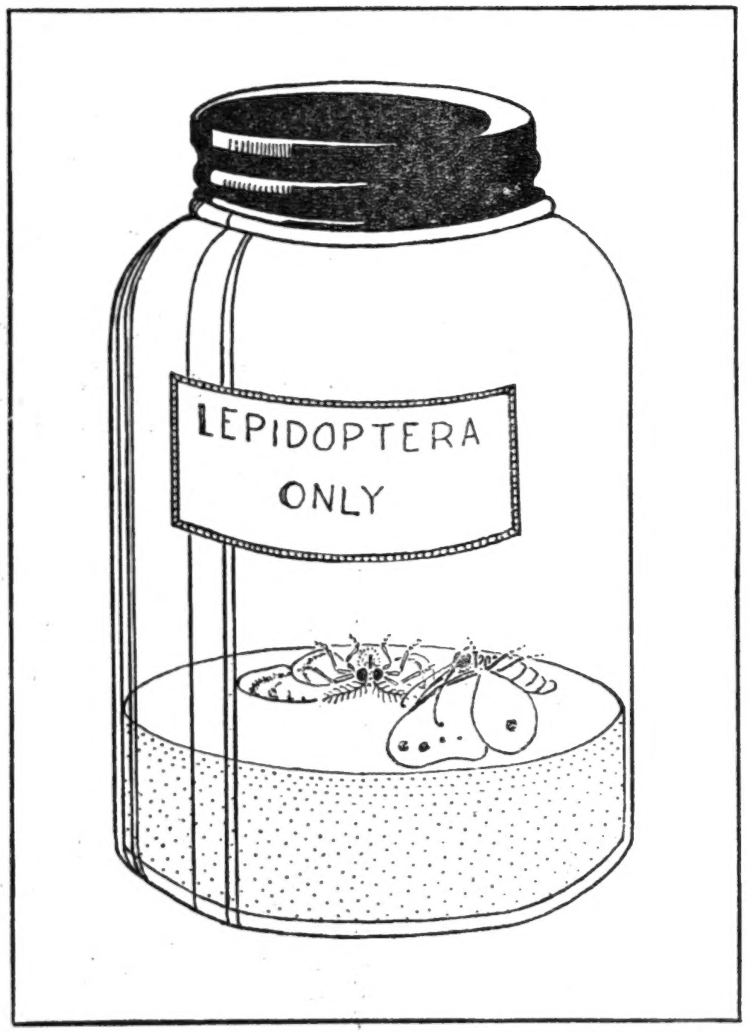
Never pour left-over plaster down the drain. It may set in the pipes and stop them up. Dump it out onto an old newspaper and put it into the wastebasket. Wash the cup and spoon right away, with plenty of water. The plaster will be very hard to get off when it's dry.

Feel the bottle while the plaster is setting. You will find it warm. When it has cooled, but while it is still damp, any plaster which may have splashed onto the sides of the bottle should be removed by scraping with a knife and dusting with a dry cloth. Label the bottle "Insect Killer" so that nobody will throw it out by mistake, and leave it open in a warm place until it is perfectly dry. This will usually take 24 hours, but you can hurry it up, if you have to, by putting the bottle on a hot radiator, or in an oven with the door slightly open.

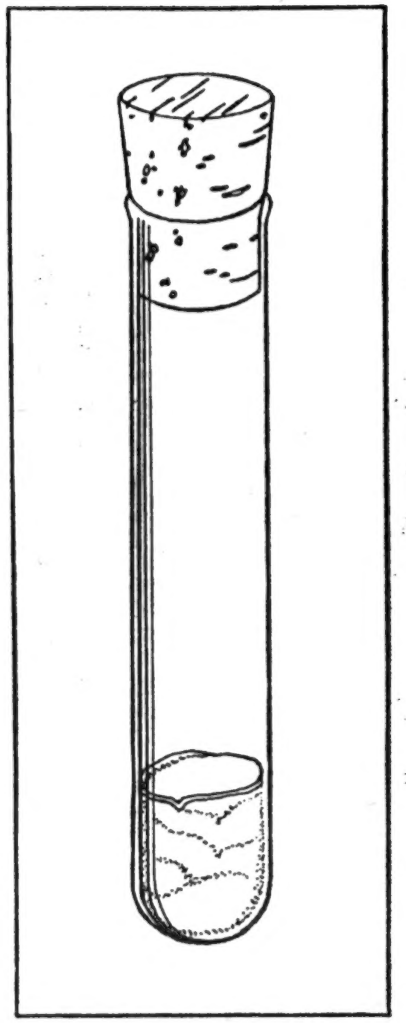
Dry plaster-of-paris is an excellent blotter, and can



A one-handed killing jar for insects.



A wide-mouthed jar for moths and butterflies.



A vest-pocket killing bottle, temporary type.

soak up an astonishing amount of liquid before becoming visibly wet. That is the secret of this kind of killing jar. If you saturate the plaster in your bottle with a volatile liquid which is poisonous to insects, it will kill your specimens quickly and safely for hours without slopping at all.

There are several fluids of which the fumes are lethal to insects but relatively harmless to people, at least in the quantities necessary for entomological collecting. Ether and chloroform are excellent, but expensive. *Ethyl acetate* is cheaper, and is preferred by some professional collectors. You can get it at the drug store, or from chemical supply houses, which are listed in the classified telephone book. When you order, ask for the technical or commercial grade. The medical quality costs more, and is not necessary. Eight ounces should last you a long time. Carbon tetrachloride, another effective killing fluid, is sold by most drug and department stores as a spot remover, under the name of Carbona, and others. No matter what they call it, the technical name is always somewhere on the label. Carbon tetrachloride leaves the specimens stiffer than do other poisons, but except in the case of butterflies which are to be mounted at once, this does not matter much.

Saturate the plaster in your jar at the beginning of every day's collecting. The liquid may be run down the inside of the bottle, or dropped in with a medicine dropper or a spoon. It will be absorbed more quickly if the whole surface of the plaster is not covered with liquid at one time, as this tends to seal in the air, which must come out before the fluid can occupy its space. The damp part of the plaster will be slightly gray, and you can watch the stain spread until it reaches the bottom all around. The bottle is then ready to use.

Keep the killing jar tightly closed except when putting in the specimens, or taking them out. Although you should not need it, you might carry a small bottle of extra killing fluid on a long trip. If the bottle is not operating efficiently, a quick sniff will tell you whether or not to re-charge it. But do not sniff too often or too long. The fumes of all those killing fluids make some people ill.

If the bottle has been over-loaded with liquid, and the specimens are dampened by it, do not be alarmed. It will dry off without doing any damage.

A jar intended for heavy bodied insects may be cushioned with several strips of paper towelling, which absorb the moisture of the specimens, and help to prevent them from clawing and biting one another. A Lepidoptera bottle should contain nothing but moths or butterflies, and not too many of them at once.

A killing jar of this kind works rapidly. It will "knock out" most insects in less than a minute, and thoroughly kill them in five. Some species, however, are very hard to kill, and, just to make sure, you had better leave everything in the jar for half an hour. It is very distressing to have a specimen come to life on the pin.

A pair of tweezers is very useful for taking insects out of a bottle. For butterflies they are essential, as these cannot be touched with the fingers without ruining their appearance. Slender, pointed tweezers can probably be bought at a drug store, but smooth broad-ended stamp forceps, which you can find in a stamp-collectors shop, are better for butterflies.

If possible, mount your specimens on the same day that you catch them. If there is no time for this, put them away between layers of thin glazed cotton or soft paper, in a tight box. The box should be left open in a warm, dry place for several days until the insects have dried out thoroughly. Then, before closing, put in a teaspoonful of paradichlorobenzene moth crystals to prevent mold and keep out the carpet beetles. "Para" is sold by drug and ten-cent stores under various trade names, of which di-chloricide is one. The full chemical name is somewhere on the box in small letters.

In an emergency, when there is not time or means to make a plaster-bottomed bottle, an acceptable substitute can be thrown together with cotton and blotting paper. Pack the cotton into the bottom of the bottle as tightly as you can, and secure it with a disc of heavy blotting paper, cut to fit the inside of the bottle snugly. Such a jar works exactly like a plaster-bottomed one, but is not effective for so long a time. The cotton wad is apt to be dislodged if the bottle is jolted.

The roper methods of mounting insects, and of relaxing those which have been dried unmounted, are discussed in leaflets numbers four and five.

Cyanide jars, valuable, under some circumstances, to the experienced entomologist, are discussed with other special equipment for advanced collectors in leaflet number seven.